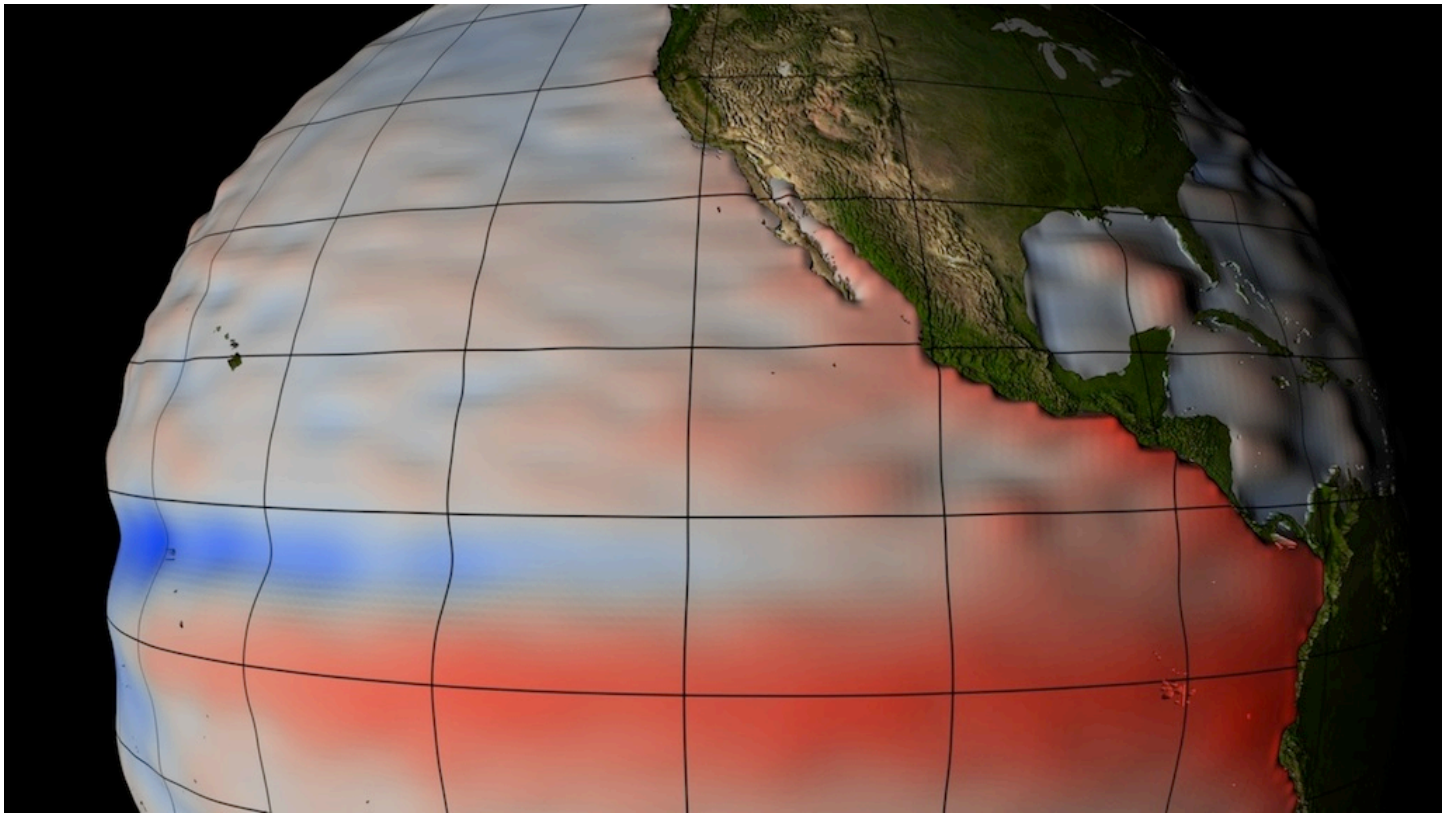
My NASA Data - Mini Lesson

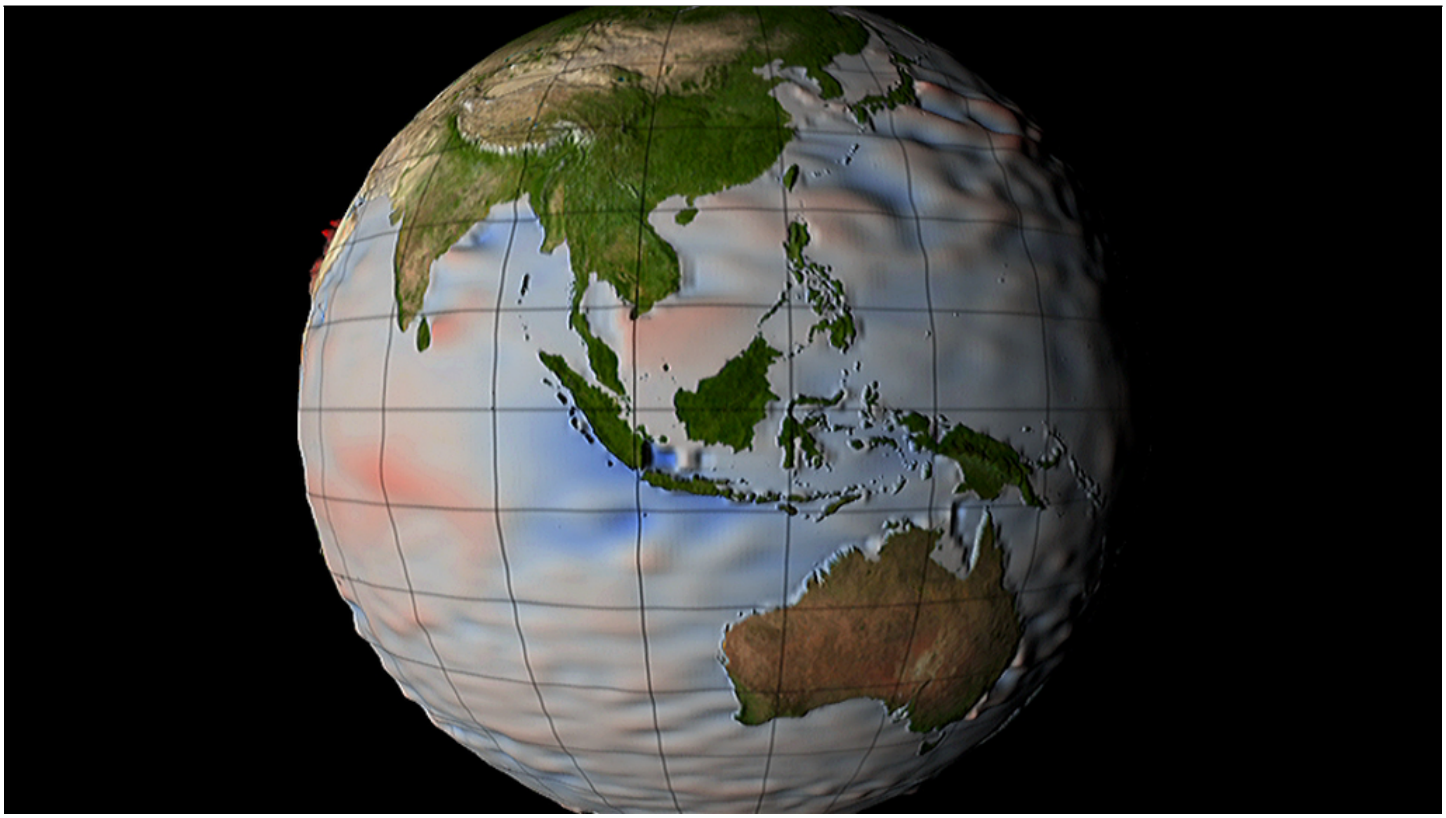
Stability and Change: Monitoring Sea Level



Mini Lesson

The Earth's system exemplifies stability and change. Change and rates of change can be observed and quantified over very short or long periods of time and various spatial scales (e.g., from landscape level to global processes). Understanding stability and change in Earth processes contributes to a more complete understanding of the Earth system.

Scientists are studying the rise of the oceans, but are they "level" to begin with?



Sea level: The phrase itself suggests our ocean and seas have a uniform height. But in fact, the surface of Earth's ocean is not level at all. The average height of the ocean surface varies by several feet across the globe. For over two decades, NASA and other space agencies have taken precise satellite measurements of sea level, down to the millimeter. The data for this visualization comes from instruments called "altimeters," which have been included on TOPEX/Poseidon, Jason-1, and Jason-2 satellites.

In this visualization, ocean surface height is indicated by color:

- Average surface height is shown in white
- Surface height that is 20 inches **above** average is shown in dark red
- Surface height that is 20 inches **below** average is shown in dark blue

Watch the following animation and answer the questions below:

1. Create a mental model to estimate the height measurements used in this video. Twenty inches is roughly equal to what common object?
2. What locations have sea surface heights that are higher than average?
3. What locations have sea surface heights that are lower than average?
4. Identify oceans that have both ends of the extremes. What might cause this?
5. What processes cause changes in sea height?
6. As you review this video, what questions come to mind?

Teachers who are interested in receiving the answer key, please contact MND from your school email address at larc-mynasadata@mail.nasa.gov.